



**ZebraLink™**

**APL-I**

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**Reference Guide**



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# About This Document

This section provides you with contact information, document structure and organization, and additional reference documents.

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## Who Should Use This Document

This Reference Guide is intended for use by any person who needs to perform routine maintenance, upgrade, or troubleshoot problems with the printer.

## How This Document Is Organized

The Reference Guide is set up as follows:

<b>Section</b>	<b>Description</b>
<i><a href="#">Introduction on page 15</a></i>	This section explains the known differences between the Zebra printer with APL-I firmware and the Intermec 3400D printer. For complete printer operation, use this guide with your 3400D User's Manual.
<i><a href="#">Commands on page 19</a></i>	This section provides a detailed listing of commands on your Zebra printer with APL-I firmware as implemented on the Intermec 3400D printer for 203 dpi.
<i><a href="#">Network Configuration on page 89</a></i>	This section describes the features and functionality of the ZebraNet Print Servers with printers using APL-I firmware.
<i><a href="#">Control Panel Options on page 95</a></i>	This appendix provides you with control panel menu options on the Zebra printers with APL-I firmware.

## Contacts

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**Self Service Knowledge Base:** [www.zebra.com/knowledgebase](http://www.zebra.com/knowledgebase)

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**Key:** T: Telephone  
F: Facsimile  
E: E-mail

## Document Conventions

The following conventions are used throughout this document to convey certain information.

**Alternate Color** (online only) Cross-references contain hot links to other sections in this guide. If you are viewing this guide online in .pdf format, you can click the cross-reference ([blue text](#)) to jump directly to its location.

### Icons Used



**Important** • Advises you of information that is essential to complete a task.



**Note** • Indicates neutral or positive information that emphasizes or supplements important points of the main text.

## Related Documents

The following documents might be helpful references:

Programming Guide for ZPL II<sup>®</sup>, ZBI 2, Set-Get-Do, Mirror and WML  
(formerly the ZPL II Programming Guide)

ZebraNet<sup>®</sup> PrintServer II User and Reference Guide

ZebraNet<sup>®</sup> 10/100 Print Server User Guide

ZebraNet<sup>®</sup> Wireless Print Server User Guide



**Notes •**

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## Introduction

This section explains the known differences between the Zebra printer with APL-I firmware and the Intermec 3400D printer. For complete printer operation, use this guide with your 3400D User's Manual.

## Overview

The Zebra printer with APL-I firmware provides you with the capability to implement certain commands of the Intermec Programming Language (IPL). These are the Zebra printers that support this capability:

- Z4Mplus/Z6Mplus
- 105SL
- *XiIIIPlus*
- *PAX4*
- S4M
- ZM400/ZM600
- Xi4

## Firmware

[Table 1](#) lists the Zebra printers and the APL-I firmware version:

**Table 1 • Printer and Firmware Support**

Printer	Firmware
S4M and ZM400/ZM600	I53.15.x
Z4Mplus/Z6Mplus, 105SL, <i>XiIIIPlus</i> , <i>PAX4</i>	I60.15.x
Xi4	I53.17.x

If you are using a print server to communicate with your printer, see [Table 3, Supported Print Servers and Firmware on page 64](#) for more specific firmware requirements.

## Control Panel

The Zebra printer with APL-I firmware control panel menu options differs from non-APL-I printers. For APL-I firmware LCD menu options, see [Control Panel Options on page 96](#).



## Troubleshooting

The Zebra printer with APL-I firmware offers a feature called the Data Capture Tool (DCT). The DCT is supported on these Zebra printers: *XiIIIPlus*, *105SL*, *PAX4*, or *Z4Mplus/Z6Mplus*. If you have a supported Zebra printer you can access this tool through the LCD menu. DCT allows you to capture any data that is sent to the printer on an ATA Flash card.

For troubleshooting purposes, you can remove the ATA Flash card from the printer when you complete the data capture, and send it to Zebra to be read.



**Important** • ATA Flash cards are the *only* supported Flash cards for all Zebra printers with APL-I firmware, except S4M and ZM400/ZM600, and Xi4 printers.



**Notes •** \_\_\_\_\_

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## Commands

This section provides a detailed listing of commands on your Zebra printer with APL-I firmware as implemented on the Intermec 3400D printer for 203 dpi.

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## Immediate Commands

Immediate commands are executed when the printer receives them. The printer mode does not matter.

### Abort Print Job

**Purpose** To abort the current print job.

**Syntax** <EM>

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** The printer stops printing the current batch, but continues processing the other commands in the buffer. The batch count is reset.

### Error Code, Request

**Purpose** To check the printer for errors and warnings.

**Syntax** <BEL>

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** The error code is either a command syntax error or a RAM usage error. A returned ASCII number represents the latest error.

**Important** • If no error has occurred since the last power up, the printer returns a zero. When this command is sent, the error code is always reset to **00**.

### Label and Gap Length, Transmit

**Purpose** To send the label length and gap length to the host.

**Syntax** <ESC>L

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** If you are using continuous media, the printer sends the length identified by the Maximum Label Length, Set command. Label length is the length of the current label. If the current label is longer than the distance between the printhead and the sensor, then the previous label's length is used.

## Remaining Quantity and Batch Count, Transmit

**Purpose** To send the remaining quantity and batch counts to the host.

**Syntax** <ESC>Q

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** This command transmits the batch and quantity counts for the active print job.

## Reset

**Purpose** To start a printer power-up reset immediately.

**Syntax** <DLE>

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** This command erases all data in the input buffer and causes the printer to cycle power.

## Status Dump

**Purpose** To upload the current status to the printer.

**Syntax** <VT>

**Partially Supported** Based on testing, this command is partially supported on the Zebra printer with APL-I firmware with the following differences and outputs:

- **Error messages not supported:** The **printhead test fail** and **takeup reel full** errors are not transmitted by this command, but all other error messages are.

## Status Enquiry

**Purpose** To send the current printer status to the host.

**Syntax** <ENQ>

**Partially Supported** Based on testing, this command is partially supported on the Zebra printer with APL-I firmware with the following differences and outputs:

- **Error messages not supported:** The **printhead test fail** and **takeup reel full** errors are not transmitted by this command, but all other error messages are.

## Print Commands

### Advanced Mode, Select

**Purpose** To switch the printer to Advanced Mode.

**Syntax** <ESC>Cn

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** When switching between Advanced Mode (default) and Emulation Mode, all entered data is lost. Page 0 is the default page, and the field pointer selects the first field in format 0.

### Alphanumeric Field Separator

**Purpose** To increase/decrease alphanumeric characters in a field separated domain.

**Syntax** <GS>

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** It is possible to have numerous data regions in one field as long as they do not overlap. Each region separately increments or decrements depending on the value entered for the specific field. Data length remains the same when setting values of increments or decrements. Values increase or decrease in a circular motion, that is, 9 increases to 0. The command identifies the areas of character to increase or decrease without actual changes.

**Important** • The printer does not recognize non-alphanumeric values.

### Batch Count, Set

**Purpose** To identify the amount of labels to print in the next batch.

**Syntax** <US>n

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** When it is used the printer, it prints a certain amount of the same label. The amount is calculated by multiplying the number of batches by the amount in each batch.

**Important** If the amount is out of range, an error code 21 is generated.

## Clear All Data

**Purpose** To clear data from previous format.

**Syntax** <CAN>

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** After you select:

- a format; the pointer specifies the first field
- a page; the pointer specifies the first data field in the format.

## Clear Data From Current Field

**Purpose** To clear data from present field.

**Syntax** <DEL>

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** After clearing the data, the field pointer continues to specify the current field.

## Command Terminator 1

**Purpose** To stop the present command.

**Syntax** <NUL>

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

## Command Terminator 2

**Purpose** To stop the present command.

**Syntax** <LF>

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

## Configuration Parameters, Transmit

**Purpose** To send the present printer configuration commands to the host.

**Syntax** <ESC>p

**Partially Supported** Based on testing, this command is partially supported on the Zebra printer with APL-I firmware with the following differences and outputs:

- **Parameters not supported:** Security level, audible alarm, power up mode, top position, printhead pressure, number of image bands, amount of storage, online power up test parameters, and printhead test are not supported by the printer. The values transmitted for them are static default values.

## Cut

**Purpose** To move the label to the cutter and cut.

**Syntax** <SO>

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** To run the Cut command, the cutter device must be present and not yet enabled. Send this command after printing stops.

## Data Shift – International Characters

**Purpose** To enter certain command characters in a data field.

**Syntax** <SUB> or <DLE>

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** This command enables you to use command characters as data characters in Advanced and Emulation modes. It shifts the next character into the upper data bank. As a result, to print international characters, the eighth bit is set to **1**.



## Direct Graphics Mode, Select

**Purpose** To enable faster image printing by not saving the graphic with the APL-I format.

**Syntax** <ESC>gm

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** The *m* argument specifies the type of the user-defined graphic data.

*Default Value:* m = 0

*Accepted Values:*

0 = 8 bits per byte

1 = 8 bits per byte, nibblized

## Emulation Mode, Enter

**Purpose** To switch the printer to Emulation mode.

**Syntax** <ESC>cn

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** This command allows you to print labels with bar codes in multiples of 10 or 15 mil that were designed on an 86XX printer.

*Default Value:* N = 0

*Values for n:*

0 = 10 mil dot size

1 = 15 mil dot size for bar codes only.

Everything else is 10 mil.

## Field, Select

**Purpose** To choose a data field for data entry.

**Syntax** <ESC>Fn

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** You **must** set the parameter for this command to the field number or the field name.

Things to be aware of:

- If you do not set the 3parameter, the printer defaults it to 0.
- If you choose the field number, the printer enters data into field *n*.
- If you enter a field name, the printer enters the data into a field with a particular name.
- You must enclose the field name in quotation marks.
- Entering an invalid field code generates error code 38.

## Field Decrement, Set

**Purpose** To set the field decrement value.

**Syntax** <ESC>Dn

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** In order to decrement the values in data entry fields, sections of data must be separated by <FS> or <GS>. The printer decrements by a previously specified amount.

**Important** If the amount is out of range, error code 22 is generated.

## Field Increment, Set

**Purpose** To set the field increment value.

**Syntax** <ESC>In

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** To use this command, you must create a format in programming mode. In order to increment the values in data entry fields, sections of data must be separated by <FS> or <GS>.

## First Data Entry Field, Select

**Purpose** To set the first data entry field to receive print mode data.

**Syntax** <ACK>

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** If you do not want to use a number to select a data field, this command ensures that the data prints in the lowest numbered field.

## Font, Transmit

**Purpose** To upload printer fonts.

**Syntax** <ESC>vn

**Not Supported** This command does not work on the Zebra printer with APL-I, or it has significant deviations from the 3400D printer.

## Form Feed

**Purpose** To feed a label.

**Syntax** <FF>

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** Things to be aware of:

- When printing on *non-continuous* media, the label is appropriately fed to the tear bar at its mark, gap, or web.
- When using *continuous* media, the printer feeds the label by the specified amount. When printing on self-strip media, the printer feeds one blank label.

## Format, Select

**Purpose** To choose a format for either data entry or output.

**Syntax** <ESC>En, m

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

*Default:* n = 0

*Values for n:* \*, 0-19

*Values for m:* not available

**Notes** Things to be aware of:

- *n* represents the numeric format ID and *m* dictates to only re-image the changed fields.
- If any page is selected other than **0**, *n* becomes an alphanumeric format position ranging from *a-z*.
- After a format is selected, the field pointer directs you to the lowest numbered data entry field.
- For the re-imaging command to work successfully and retain the image, the printer must be able to fully image a label within the range of available image bands.
- The printer erases all host entered/variable data from the format.

**Important** If an invalid format number is entered, error code 36 is generated.

## Format, Transmit

**Purpose** To send a printer format to the host.

**Syntax** <ESC>xn

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** Things to be aware of:

- If <ESC>x is sent to the printer without specifying the value for *n*, the printer uploads the complete format directory. The format directory is in the following format:
- [Idnumber] [name] [type] [storage size] <CR><LF>. [Idnumber] is the value identified by *n*. [name] is the name set out in the command that created the format. [type] is **0**. [storage size] is the amount of memory necessary to store the format.
- If you enter an incorrect number, an error code 25 is generated.
- The printer **must** stay in Advanced mode.

## Increment and Decrement, Disable

**Purpose** To clear the present field's increment or decrement settings.

**Syntax** <ESC>N

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** Both the decrement and increment flags are reset for the selected field.

## Memory Usage, Transmit

**Purpose** To display the amount of printer memory being used.

**Syntax** <ESC>mn

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** Initially, the printer sends the amount of total storage available. Then the printer sends the amount of available RAM that is not being used and the amount of total RAM, for example: 32,10.

## Next Data Entry Field, Select

**Purpose** To move the field pointer to the next data entry field.

**Syntax** <CR>

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Important** Things to be aware of:

- If you have not selected a page and the pointer is in the last field, it moves to the first data entry field.
- If you have selected a multi-format page, the pointer moves from the last field in the first format to the first field in the next format.

## Numeric Field Separator

**Purpose** To identify numeric data in a field to increase or decrease.

**Syntax** <FS>

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** It is possible to have numerous data regions in one field as long as they do not overlap. Depending on the value entered for the specific field, each data region separately increments or decrements. The data length remains the same when setting values of increments or decrements.

**Important** Values increase or decrease in a circular motion. For example, **9** increases to **0**. The printer does not recognize non-alphanumeric values.

## Options Selected, Transmit

**Purpose** To transmit the selected options list.

**Syntax** <ESC>0

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** Values returned by printer:

**0** = No options selected

**1** = Cutter

**2** = Self Strip

## Page, Select

**Purpose** To choose a page for either data entry or output.

**Syntax** <ESC>Gn

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** If you select a type of page, the pointer designates the first entry field in the lowest numbered format.

**Important** • Things to be aware of:

- All user entered data is erased.
- If an invalid page number is entered, an error code 36 is generated.

## Page, Transmit

**Purpose** To upload a printer page and show commands that create a format.

**Syntax** <ESC>yn

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** Things to be aware of:

- Sending <ESC>y without designating a value for *n* causes the printer to upload the complete page directory.
- The page directory is in this format: [Idnumber] [name] [type] [storage size]<CR><LF>. [Idnumber] is the value identified by *n*. [name] is the name set out in the command that created the page. [type] is 1. [storage size] 0.
- If you enter an invalid number, error code 26 is generated.
- The printer must remain in Advanced mode.

## Print

**Purpose** To print the present page or format.

**Syntax** <ETB>

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** Prints the format with the data that was previously entered.

## Printhead Parameters, Transmit

**Purpose** To send the number of dots and dot size in the printhead to the host.

**Syntax** <ESC>H

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Example** This is an example of a transmitted printhead parameter value: 895.5.0.

## Program Mode, Enter

**Purpose** To switch to Program mode.

**Syntax** <ESC>P

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** Using this command erases all previously entered data.

## Program Number, Transmit

**Purpose** To send program and version number.

**Syntax** <ESC>Mn

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** This command uploads the program number and software version to the host computer. The data is represented as an ASCII alphanumeric character string.



## Quantity Count, Set

**Purpose** To set the number of printed label batches.

**Syntax** <RS>n

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** Data increments and decrements occur between batches of labels.

**Important** If the quantity is out of range, error code 21 is generated.

## Start and Stop Codes (Code 39), Print

**Purpose** To print a Code 39 bar code with no data.

**Syntax** <ESC><SP>

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** The printer erases all data in the current field.

## Test and Service Mode, Enter

**Purpose** To switch to Test and Service mode.

**Syntax** <ESC>T

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** If this command is sent, any previously sent host data is erased. The printer enters Test and Service mode after the printer completes all jobs.

## User-Defined Characters, Transmit

**Purpose** To send a graphic to the host.

**Syntax** <ESC>u

**Not Supported** This command does not work on the Zebra printer with APL-I, or it has significant deviations from the 3400D printer.

## User-Defined Tables, Transmit

**Purpose** To send the user-defined command and protocol tables so that the printer gets to download a new command set.

**Syntax** <ESC>Z

**Not Supported** This command does not work on the Zebra printer with APL-I, or it has significant deviations from the 3400D printer.

## Warm Boot

**Purpose** To reset the printer after other commands in the buffer are executed.

**Syntax** <BS>

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** This command is executed after all previous commands are completed. Any information sent after this command is lost. When configuration commands require a printer reset, use this command.

## Configuration Commands

### Amount of Storage, Define

**Purpose** To determine the amount of RAM that is allocated for storage.

**Syntax** <SI>N

**Partially Supported** Based on testing, this is a partially supported command with the following differences and outputs:

- This command does not define the amount of memory in the printer because this is done by the hardware. However, when this command is executed, user-defined formats, fonts, and graphics are erased from memory.

### Auto-Transmit 1, Enable

**Purpose** To enable auto-transmit 1.

**Syntax** <ESC>j

**Partially Supported** Based on testing, this command is partially supported on the Zebra printer with APL-I firmware with the following differences and outputs:

- **Error messages not supported:** The **takeup reel full** error is not transmitted by this command, but all other error messages are.

### Auto-Transmit 2, Enable

**Purpose** To enable auto-transmit 2.

**Syntax** <ESC>d

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** With auto transmit level 2 enabled, the printer transmits the status code indicating there is room in the input buffer:

<DC1> = when using APL-I handshaking protocol

<DC2> = when using XON/XOFF handshaking protocol

Without level 2 enabled, the host must determine the status using alternate commands (<VT> or <ENQ>).

## Auto-Transmit 3, Enable

**Purpose** To enable auto-transmit 3.

**Syntax** <ESC>e

**Partially Supported** Based on testing, this command is partially supported on the Zebra printer with APL-I firmware with the following differences and outputs:

- **Error messages not supported:** The **imager overrun, printing complete,** and **buffer empty** errors are not transmitted by this command, but all other error messages are.

## Auto-Transmit 1, 2, and 3, Disable

**Purpose** To disable auto-transmit 1, 2, and 3.

**Syntax** <ESC>k

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** This command turns off the auto transmit status responses.

## Cutter, Enable or Disable

**Purpose** To enable or disable the cutter option.

**Syntax** <SI>cn

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** With the cutter option installed, this command turns the cutter on or off.

*Default Value:* n = 0

*Values for n:*

0 = Turns cutter off

1 = Turns cutter on

## Dark Adjust, Set

**Purpose** To set printer darkness.

**Syntax** <SI>dn

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** Things to be aware of:

*Default:* n = 0

*Values for n:*

+10 is the darkest setting and -10 is the lightest setting, in increments of 1.

## Emulation or Advanced Mode on Power-Up

**Purpose** To choose Emulation or Advanced mode when printer is turned on.

**Syntax** <SI>C

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

*Default Value:* n = 1

*Values for n:*

- 0 = Emulation mode (10 mil)
- 1 = Advanced mode (5 mil)
- 2 = Emulation mode (15 mil)

**Important** This command takes effect after power has been cycled on the printer.

## End-of-Print Skip Distance, Set

**Purpose** To determine the end-of-print skip distance.

**Syntax** <SI>Dn

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** This command is not usable in self-strip purposes. In order to advance the media to the tear bar, you have to enter a value for *n*. This value applies to continuous media and label stock media. Without entering a value for *n*, the printer uses the default setting.

## IBM Language Translation, Enable or Disable

**Purpose** To enable and disable the IBM language translation.

**Syntax** <SI>n

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** This command overrides the language translation on the printer. This allows IBM compatible characters to be used instead of ASCII characters derived from the printer's language.

*Default Value:* n = 0

*Values for n:*

0 = disable IBM

1 = enable IBM

## Intercharacter Delay, Set

**Purpose** To determine the intercharacter delay for transmissions.

**Syntax** <SYN>n

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** This command sets the delay time in milliseconds between characters in a printer transmitted message.

*Default:* n = 0

*Values for n:* 0 - 9999

## Label Rest Point, Adjust

**Purpose** To adjust where labels stop for removal when the printer is configured for non-continuous media.

**Syntax** <SI>fn

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** You can enable this control through the control panel.

*Default:* n = 0

*Values for n:* -30 (backwards) to +30 (forward) in 5 mil increments

## Label Retract, Enable or Disable

**Purpose** To turn on or off the label retract feature when the printer is configured for continuous media.

**Syntax** <SI>Rn

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** Things to be aware of:

*Default:* n = 1

*Values for n:*

**0** = disables label retract

**1** = enables label retract

## Label Retract Distance, Set

**Purpose** To set the label retract distance.

**Syntax** <SI>rn

**Not Supported** This command does not work on the Zebra printer with APL-I, or it has significant deviations from the 3400D printer.

## Label Stock Type, Select

**Purpose** To set the media type.

**Syntax** <SI>Tn

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** The *n* argument specifies the media type.

*Default:* n = 1

*Values for n:*

- n = continuous media
- 1 = non-continuous media with web or gaps separating labels
- 2 = non-continuous media with marks separating labels

## Label Width, Set

**Purpose** To determine the label width.

**Syntax** <SI>Wn

**Not Supported** This command does not work on the Zebra printer with APL-I, or it has significant deviations from the 3400D printer.



## Maximum Label Length, Set

**Purpose** To identify the maximum label length.

**Syntax** <SI>L

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** This command is primarily used for detecting media errors.

## Media Sensitivity, Select

**Purpose** To choose the printers media sensitivity.

**Syntax** <SI>gn,m

**Partially Supported** Based on testing, this command is partially supported on the Zebra printer with APL-I firmware with the following differences and outputs:

- The first argument sets the media type; when  $n = 0$ , direct thermal media is selected, and when  $n = 1$  thermal transfer media is selected.
- The second argument of this command is not used.

## Message Delay, Set

**Purpose** To determine the delay between transmissions.

**Syntax** <ESC><SYN>n

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** This command determines the delay in milliseconds before all printer transmissions begin.

*Default:*  $n = 0$

*Values for n:* 0 - 9999

## Number of Image Bands, Set

**Purpose** To determine the number of image bands.

**Syntax** <SI>I

**Partially Supported** Based on testing, this command is partially supported on the Zebra printer with APL-I firmware with the following differences and outputs:

- the number of image bands does not need to be set with this command since this quantity is automatically calculated while printing a label.

## Postamble, Set

**Purpose** To determine the character that is sent before every transmission.

**Syntax** <EOT>n

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** Assigns the Postamble character.

*Default:* n = <NUL>

*Values for n:* Any ASCII character

With *n* equal to default value, a postamble character is not sent by the printer.

## Preamble, Set

**Purpose** To determine the character that is sent before every transmission.

**Syntax** <SOH>n

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** Assigns the Postamble character.

*Default Value:* n = <NUL>

*Values for n:* Any ASCII character

With *n* equal to default value, a preamble character is not sent by the printer.

## Print Speed, Set

**Purpose** To determine the print speed.

**Syntax** <SI>Sn

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** Defines the print speed.

*Default:* n = 30

*Values for n:* 20, 30, 40, 50 or 60

20 = 2 inches per second (ips), 30 = 3 ips, etcetera.

## Printer Language, Select

**Purpose** To determine the printer language.

**Syntax** <SI>l<sub>n</sub>

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

*Default Value:* n = 0

*Values for n:* 0 - 10

**Notes** Only one language can be used for a print job. If it is necessary to use more than one language, you can either bitmap the TrueType fonts or create your own bitmap font. The default language selection should supply you with the necessary characters for a bitmap. However, if you are using a TrueType font, it is imperative that you match code to the language. If you downloaded a scalable font, you must first download the correct code.

## Printhead Loading Mode, Select

**Purpose** To determine the printhead loading mode.

**Syntax** <SI>hn, m

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** Printing batches of labels in inverse mode is not recommended due to wear on the printhead.

## Self-Strip, Enable or Disable

**Purpose** To enable or disable the self-strip feature.

**Syntax** <SI>t $n$

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** Activates or deactivates the peel sensor.

*Default:*  $n = 0$

*Values for  $n$ :*

0 = Peel Sensor Off

1 = Peel Sensor On

## Top of Form, Set

**Purpose** To set the form top position.

**Syntax** <SI>F $n$

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** Sets the label top position in 5 mil increments from the position to the lead edge of the label.

*Default:*  $n = 20$

*Values for  $n$ :* -10 to 4000

Negative values allow you to minimize the distance between the print and edge of the label.

## Program Mode Commands

### Bar Code, Select Type

**Purpose** To choose the bar code field type.

**Syntax** `c`

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** This command defines the Symbology of the bar code.

`cn , m1 , m2 , m3`

*Values for n:*

- 0** = Code 39
- 2** = Interleaved 2 of 5
- 3** = Code 2 of 5
- 4** = Codabar
- 5** = Code 11
- 8** = HIBC Code 39
- 10** = Code 49
- 15** = JIS-ITF
- 16** = HIBC Code 128
- 17** = Datamatrix

If you use the Null character in the Bar code data stream, you will lose that character as well as any following data. If using any of the following control characters (<RS>, <GT>, <EOT>, etcetera) you have to precede it with a <SUB> character.

## Code 39

**Purpose** To specify a Code 39 bar code field.

**Syntax** `c0`

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** This command has one argument, *m* for mode, which defaults to 0.

These are the types of Code 39 that are supported:

- Full ASCII
- 43 Character
- 8646 compatible

8646 Compatible is the same as full ASCII with the exception of four characters (the “+”, “/”, “%”, “\$” are used as single characters rather than used as “/K”, “/O”, “/E”, “/D”). This version makes it backward compatible with the 86XX printers.

These are the supported Code 39 bar code modes:

- m** Code 39 Mode
- 0** No check digit, 8646 compatible bar code type.
- 1** Printer provides check digit, 8646 compatible type.
- 2** User provides check digit, which is verified by printer 8646 compatible type.
- 3** No check digit, full ASCII type.
- 4** Printer provides check digit, full ASCII type.
- 5** User provides check digit, which is verified by printer, full ASCII type.
- 6** No check digit, 43 character type.
- 7** Printer provides check digit, 43 character type.
- 8** User provides check digit, which is verified by printer, 43 character type.

## Code 93

**Purpose** To specify a Code 93 bar code field.

**Syntax** `c1`

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** Things to be aware of:

- There are no arguments for the Code 93 bar code.
- If a string has an odd number of characters, the printer automatically adds a zero.

## Interleaved 2 of 5

**Purpose** To specify an Interleaved 2 of 5 bar code field.

**Syntax** `c2, m`

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** Things to be aware of:

- The `c2` command has one argument, *m* for mode, which defaults to 0.
- The Interleaved 2 of 5 bar code supports these modes:
  - m** Interleaved 2 of 5 Mode
  - 0** No check digit.
  - 1** Printer provides check digit.
  - 2** User provides check digit.
- Zeros are added to any odd length strings.

## Code 2 of 5

**Purpose** To specify a Code 2 of 5 bar code field.

**Syntax** `c3, m`

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** Things to be aware of:

- The `c3` command has one argument, *m* for mode, which defaults to 0.
- The Code 2 of 5 bar code supports these modes:
  - m** Interleaved 2 of 5 Mode
  - 0** Start/stop code size is 3 bars.
  - 1** Start/stop code size is 2 bars.

## Codabar

**Purpose** To specify a Codabar bar code field.

**Syntax** `c4, m`

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** Things to be aware of:

- The `c4` command has one argument, *m* for mode, which defaults to 0.  
*Default:* m - 0  
*Values for m:* m = 0
- The Codabar bar code supports these modes:
  - m** Codabar Mode
  - 0** User provides start/stop codes, which are verified by printer.
  - 1, x, y** Printer provides start code x and stop code y, where x and y are values with ranges of A to D and a to d.
- You can send the start/stop characters as part of the human readable field of the bar code or as a separate text field (print data). Characters sent down as printer data override start/stop characters defined by the bar code field.

## Code 11

**Purpose** To specify a Code 11 bar code field.

**Syntax** `c5, m`

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** Things to be aware of:

- The `c5` command has one argument, *m* for mode, which defaults to 0.  
*Default:* m = 0  
*Values for m:*
- The Code 11 bar code supports these modes:
  - m** Code 11 Mode
  - 0** Printer provides two check digits.
  - 1** Printer provides one check digit.
  - 2** User provides two check digits, which are verified by the printer.
  - 3** User provides one check digit, which is verified by the printer.



## Code 128

**Purpose** To specify a Code 128 bar code field.

**Syntax** `c6, m1, m2`

**Partially Supported** Based on testing, this command is partially supported on the Zebra printer with APL-I firmware with the following differences and outputs:

- The `c6` command has one argument, `m` for mode, which defaults to 0.
- When more than 19 characters are specified as data, the first 19 are used as data
- When fewer than 19 are specified, data is zero-filled up to 19 characters. The first two characters are not forced to be zeroes.

The Code 128 bar code supports these modes:

- m** Code 128 Mode
  - 0** Printer provides two check digits.
  - 1** Printer provides one check digit.
  - 2** User provides two check digits, which are verified by the printer.
  - 3** User provides one check digit, which is verified by the printer.

## UPC/EAN

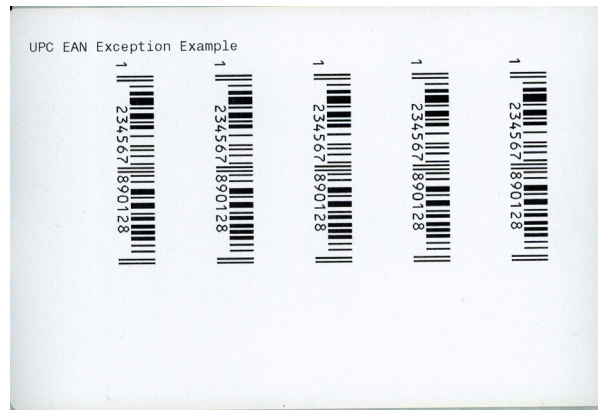
**Purpose** To specify a UPC/EAN bar code field.

**Syntax** `c7,m1,m2`

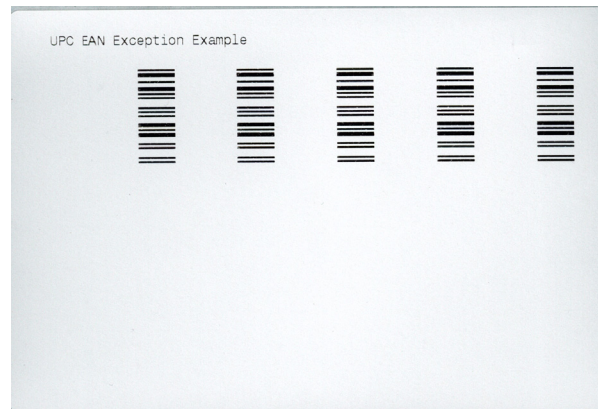
**Partially Supported** Based on testing, this command is partially supported on the Zebra printer with APL-I firmware with the following differences and outputs:

These label examples show the difference between labels when entered data is too long:

### APL-I Printer Label



### Intermec 3400D Printer Label



**Bar codes not implemented:** version D1-D5. When data entered is too long, an EAN-13 bar code is printed.

## HIBC Code 39

**Purpose** To specify an HIBC Code 39 bar code field.

**Syntax** `c8 ,m1 ,m2`

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** The `c8` command has two arguments, `m1` and `m2`, and `m1` defaults to 0.

*Default:* `m1 = 0`

*Values for m1 Supplier Std.:*

- 0** = Primary format
- 1** = Backup Primary format
- 2, m2** = Second Data format. The linking character comes from the field identifier (`,m2` value)

*Values for m1 Provider Std.:*

- 3** = Single format
- 4** = 1st data format
- 5, m2** = Second Data Format.

The linking character comes from the field identifier (`,m2` value).

The HIBC Code 39 bar code supports these modes:

m1	HIBC Code 39 Mode
0	Primary format.
1	Alternate Primary format.
2, m2	Secondary format with m2 as the linkage character and field identifier.
3	Single format.
4	First data format.
5, m2,	Second data format with m2 as the linkage character and field identifier.
6	Multiple data format.

## Code 16K

**Purpose** To specify a Code 16K bar code field.

**Syntax** c9

**Partially Supported** Based on testing, this command is partially supported on the Zebra printer with APL-I firmware with the following differences and outputs:

- The Zebra printer with APL-I firmware does not support linked bar codes, or using a set of bar codes to print a single data string too large for one bar code.

## Code 49

**Purpose** To specify a Code 49 bar code field.

**Syntax** c10

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** Things to be aware of:

- The c10 command has no arguments.
- Use a <SUB> 1 command to symbolize the function 1 character in Emulation mode. If using Advanced mode, you can symbolize the function 1 character by using the <SUB><SUB> 1. The same holds true for function characters 2, 3, and 4.
- To call up a square symbol in Advanced mode, use a height magnification of 1. While in Emulation mode, use a magnification of 250.

**Important** Only Alphanumeric (0) and numeric (2) modes are supported by the printer.

## POSTNET

**Purpose** To specify a POSTNET bar code field.

**Syntax** `c11`

**Partially Supported** Based on testing, this command is partially supported on the Zebra printer with APL-I firmware with the following differences and outputs:

These label examples show that the interpretive field commands have no effect on the bar code positioning, spacing, and sizing:

### APL-I Printer Label



### Intermec 3400D Printer Label



**Notes** The `c11` command has no arguments.

Even if specified, an interpretive field is disabled by the command and does not print.

**Origin difference** y-direction.

## PDF417

**Purpose** To specify a PDF417 bar code field.

**Syntax** m1, m2 and m3 are the three arguments of the c12 command.

**Partially Supported** Based on testing, this command is partially supported on the Zebra printer with APL-I firmware with the following differences and outputs:

These label examples show a slight difference in dot pattern, bar codes with non-standard characters print slightly smaller, and difference in magnification ranges.

### APL-I Printer Label



### Intermec 3400D Printer Label



## Using ,m1 to Select the Number of Columns

**Purpose** To set the number of columns in the PDF417 bar code.

**Syntax** This parameter, which defaults to 0, is the number of columns of data characters; the range of values is 0 to 30.

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** ,m1 represents the number of columns needed to create a symbol. The range is 0 (default) to 30. If you select 0, the printer automatically uses the number of columns necessary for the symbol that is closest to the shape of a square.

## Using ,m2 to Select an Error Correction Level

**Purpose** To set an error correction level for a PDF417 bar code.

**Syntax** This parameter, which defaults to 9, is the error correction level; the range of values is 0 to 9.

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** The error correction level should be set according to the number of code words (compressed data) generated from the PDF417 bar code's data. The table below shows a list of the values of m2, the corresponding suggested number of code words, and the error detection characters that will be generated at that setting.

m2	Number of Code words	Error Detection Characters Generated
0	<not recommended>	2 (no error recovery)
1	<not recommended>	4
2	1-40	8
3	41-160	16
4	161-320	32
5	321-863	64
6	<reserved for special applications>	128
7	<reserved for special applications>	256
8	<reserved for special applications>	512
9	<printer automatically determines error correction level> varies	

## Using ,m3 to Set the Truncate Flag

**Purpose** This is an argument for the c12 command that customizes the PDF417 bar code.

**Syntax** This parameter, which defaults to 0, is the truncate flag. When set, the bar code will print without right row indicators and with a one-module wide stop character.

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** It enables you to enable printing the symbol in truncated form or to disable printing in truncated form.

*Default:* m3 = 0

*Values for ,m3,*

0 = disables truncating

1 = enables truncating

It is highly recommended that you use the default setting for , m3 in order to reduce errors and maintain a better reading performance.

This shows the maximum allowable characters for the 3 character sets.

Character Set	Data Capacity
Full ASCII	1108
Alphanumeric	1850
Numeric	2725

**Important** Use these guidelines. Due to the fact that 2-dimensional symbols encode data by compressing it, the capacity varies due to the data being encoded.



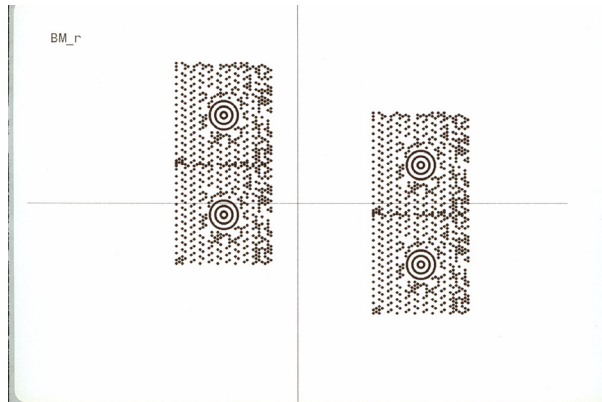
## MaxiCode

**Purpose** To specify a Code MaxiCode bar code field.

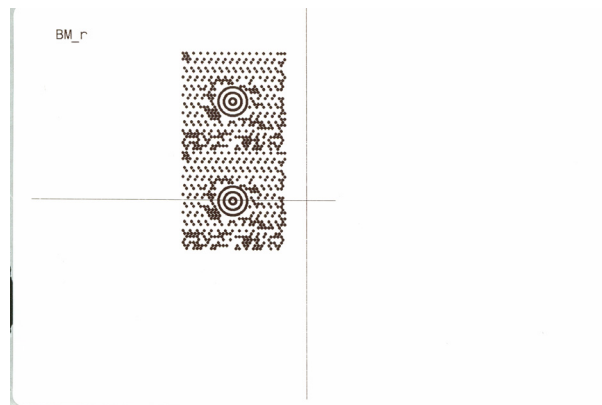
**Syntax** `c14,m1`

**Partially Supported** Based on testing, this command is partially supported on the Zebra printer with APL-I firmware with the following differences and outputs:

### APL-I Printer Label



### Intermec 3400D Printer Label



**Notes** The `c14` command has one argument, `m` for mode, which auto defaults between modes 2 through 4.

See the labels examples to see the differences between printers.

- Interpretive field fonts could be different.
- Bar codes might print. They do not print on 3400D printers.

The MaxiCode bar code supports these modes:

<b>m</b>	<b>MaxiCode Mode</b>
<b>2</b>	Structured Carrier Message format to be used with postal codes up to 9 digits long.
<b>3</b>	Structured Carrier Message format to be used with alphanumeric postal codes up to 6 digits or characters long.
<b>4</b>	Standard bar code.
<b>5</b>	Full EEC or enhanced error correction.
<b>6</b>	Reader programming mode.

## JIS-ITF

**Purpose** To specify a JIS-ITF bar code field.

**Syntax** `c15,m`

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** The `c15` command has one argument, `m` for mode, which defaults to 0.

*Default Value:* `m = 0`

*Values for n,m*

- 0** = 5 dot narrow magnification
- 1** = 8 dot narrow magnification
- 2** = 10 dot narrow magnification

The next command specifies the data source and how many characters are in the current field.

*Default Value:* `0,14`

*Values for n:*

<b>D0 ,m</b>	This field acquires data from a host. The value for ,m is the data length: 6 (Condensed), 14 (Standard), or 16 (Extended).
<b>D2 ,m</b>	This field is a slave field and acquires its data from the , m field.
<b>D3 ,m</b>	The printer specifies the data during program mode (fixed). The ,m value dictates the JIS-ITF type. If the length of the data is not exactly 6, 14, or 16, it will round up to the next highest value (JIS-ITF type) and pad with zeros.

**Important** The JIS-ITF bar code always includes an interpretive field located underneath the bar code field. This symbology cannot achieve a true 2.5 to 1 ratio due to the printhead dot size limitations. The actual ratio is 2.4 to 1.

## HIBC Code 128

**Purpose** To specify an HIBC Code 128 bar code field.

**Syntax** `c16,m1,m2`

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** The `c16` command has two arguments, `m1` and `m2`, and `m1` defaults to 0.

The HIBC Code 128 bar code supports these modes:

<b>m1</b>	<b>HIBC Code 128 Mode</b>
<b>0</b>	Primary format.
<b>1</b>	Alternate Primary format.
<b>2, m2</b>	Secondary format with m2 as the linkage character and field identifier.
<b>3</b>	Single format.
<b>4</b>	First data format.
<b>5, m2</b>	Second data format with m2 as the linkage character and field identifier.
<b>6</b>	Multiple data format.

## Data Matrix Symbology Versions ECC-100 and ECC-200

**Purpose** To specify a Data Matrix Symbology Versions ECC-100 and ECC-200 bar code field.

**Syntax** `c17, m1, m2, m3, m4, m5, m6`

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** This command selects the Data Matrix symbology. Data Matrix is a 2d symbology consisting of square modules arranged within a finder pattern. The 2 versions of Data Matrix that are supported are ECC-100 and ECC-200.

The names, purposes, and default values of these parameters are listed below:

<b>Argument</b>	<b>Purpose</b>	<b>Default Value</b>
<b>m1</b>	Enhanced error correction 200	200
<b>m2</b>	Square mode	0
<b>m3</b>	Position of current symbol in group	0
<b>m4</b>	Total number of symbols in group	m3 parameter
<b>m5</b>	File ID number	1
<b>m6</b>	File ID number	1

## QR Code

**Purpose** To specify a QR Code bar code field.

**Syntax** `c18,m1,m2,m3`

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** The `c18` command has three arguments.

You can only produce QR symbols up to 3550 characters.

The names, purposes, and default values of these parameters are listed here:

Argument	Purpose	Default/Possible Values
<b>m1</b>	Enhanced error correction 200	2/1,2 for Model 1,2 resp.
<b>m2</b>	Square mode	M/L,M,Q,H for 7,15,25,30% error correction, resp.
<b>m3</b>	Mask number	8/0-7 for mask type, 8 for auto-selection of mask

## MicroPDF417

**Purpose** To specify a MicroPDF417 bar code field.

**Syntax** `c19,m1,m2`

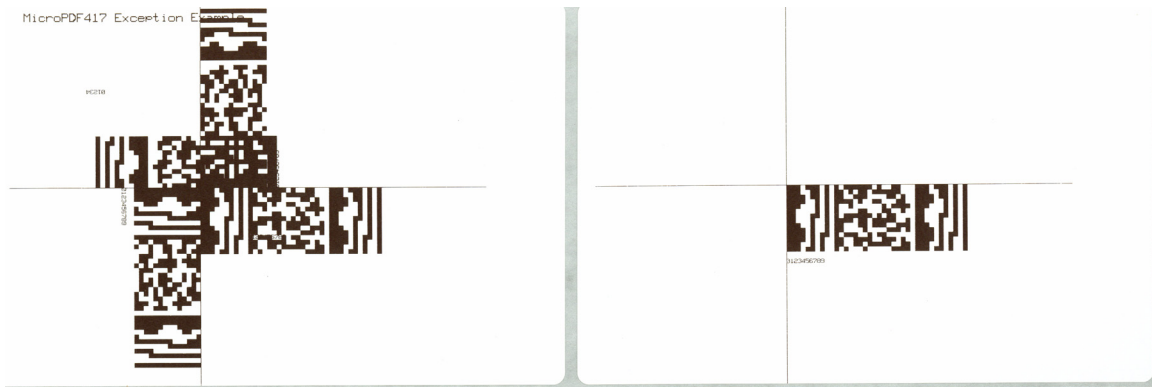
**Partially Supported** Based on testing, this command is partially supported on the Zebra printer with APL-I firmware with the following differences and outputs:

These label examples show the bar code position might differ when the bar code is rotated 180 degrees:

**APL-I Printer Label**



**Intermec 3400D Printer Label**



The `c19` command has 2 arguments.

When rotated 180 degrees, bar code position could differ.

The names, purposes, and default values of these parameters are listed below:

Argument	Description	Default Value
m1	Number of columns of data in bar code; possible values of 0-4, where 0 lets the printer set the best-fitting value.	0
m2	Number of rows of data in bar code; possible values depend on the value of m1, and 0 lets the printer set the best-fitting value.	0

## Bar Code Field, Create or Edit

**Purpose** To edit or create a bar code field.

**Syntax** Bn, name

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** By creating a bar code field and enabling the interpretive parameter, you consequentially create an interpretive field.

**Important** If the field number is out of range, an error code 38 is generated.

## Bitmap Cell Height for Graphic or UDF, Define

**Purpose** To determine the height of a graphic or user-defined font.

**Syntax** yn

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** Sets the graphic or user-defined font height.

*Default:*

n = 1 Bitmap Fonts

n = 10 Outline fonts

n = 50 graphics

*Values for n:* 1 to 799

**Note** • Things to be aware of:

- n represents the number of rows for the graphic or font bitmap.
- If an invalid height is entered, an error code of 52 is generated.

## Bitmap Cell Width for Graphic or UDF, Define

**Purpose** To determine the max width of a graphic or user-defined font.

**Syntax** `xn`

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

## Bitmap User-Defined Font, Clear or Define

**Purpose** To clear or create a user-defined bitmap font set.

**Syntax** `Tn`

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** You can recreate an existing font, but in order to edit the characters you must transmit the complete font. Defining a font previously sent erases all previous characters in the font.



## Border Around Human-Readable Text, Define

**Purpose** To add a border around a human-readable field.

**Syntax** `bn`

**Partially Supported** Based on testing, this command is partially supported on the Zebra printer with APL-I firmware with the following differences and outputs:

These label examples show that when used with smooth fonts, the border does not enclose character descenders.

APL-I Printer Label



Intermec 3400D Printer Label



## Box Field, Create or Edit

**Purpose** To edit or create a box field.

**Syntax** Wn, name

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** This command is used to design a box field.

*Default:* n = 0

*Values for n:* 0 – 199; name is optional

Names can be up to 8 characters but cannot start with a number.

Box field command parameters are as follows:

<b>Field Origin</b>	0
<b>Default</b>	0,0
<b>Field Direction</b>	f Default = 0 degrees
<b>Box Length</b>	l Default = 100
<b>Box Height</b>	h Default = 100
<b>Box Width</b>	w Default = 1

## Character Bitmap Origin Offset, Define

**Purpose** To determine the offset, to the right, of all characters in a font.

**Syntax** Xn

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** This command specifies the offset (to the right) of all characters in a font. The value for n = the number of columns to the right that the character origins shift.

*Default:* n = 0

*Values for n:* 0 – 800

**Important** You can use this command only with bitmapped fonts.

## Character Rotation or Bar Code Ratio, Define

**Purpose** To determine the character rotation for human-readable fields, or the bar code ratio for a bar code field.

**Syntax** `rn`

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

*Character Rotation Default*

- `n` = 0
- `1` = horizontal
- `2` = 90° counterclockwise

*Bar Code Ratio Default:* `n` = 1

Bar code fields, ratio of wide to narrow bar

*Accepted values for n:*

- `0` = 2.5 to 1
- `1` = 3.0 to 1
- `2` = 2.0 to 1
- `3` = 3.0 to 1
- `n` = 3 is used for Code 39 and creates a ratio of 7 dots to 3 dots.

## Code 39 Prefix Character, Define

**Purpose** To determine the prefix for a Code 39 field.

**Syntax** `p, n1, n2, n3, n4`

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

*Default is for No prefix*

*Accepted values for n:* A - Z (case sensitive) and 0 – 9

After selecting the prefix, enter Code 39.

**Example** `c0,3;pABC4`; not `pABC4;c0,3`; Use the @ character for `n1` to clear all prefixes. Prefix characters are not represented in the interpretive field.

## Command Tables, Load

**Purpose** To download a command table.

**Syntax** C

**Not Supported** This command does not work on the Zebra printer with APL-I, or it has significant deviations from the 3400D printer.

## Current Edit Session, Save

**Purpose** To save the current page, format, UDC, or UDF being edited.

**Syntax** N

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** The current page, format, or UDC is automatically saved when you call a new one or when you exit Program mode.

## Data Source for Format in a Page, Define

**Purpose** To define a data source for a format assigned to a page position.

**Syntax** en, m1, m2

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

*Default Value:*

**n** = 0

**m** = a

**m2** = 0

*Accepted values for n:*

0 = formats receive their data while in Print mode

1 = format is slave to another format on this page.

## Field, Delete

**Purpose** To delete field **n** from the format.

**Syntax** Dn

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

*Default Value:* n = 0

*Accepted values for n:* 0 – 199

**Notes** It is not allowable to delete the last field within a format. If the current field is deleted, the field pointer will point to the next field. If the master field is deleted, all slave fields of the master are deleted.

## Field Data, Define Source

**Purpose** To determine a data source for the current field and how many characters are in the field.

**Syntax** dn, m1, m2

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

*Default values bar code fields:* 0,20,0

*Default values human-readable fields:* 0,30,0

*Accepted values for n:*

- 0 = Data entered while in Print mode
- 1 = Data entered while in Print mode
- 2 = Data from field, m1
- 3 = Fixed data

*Accepted values for m1 (d0 or d1):* 0 - 3550

## Field Direction, Define

**Purpose** To determine the field rotation.

**Syntax**  $f_n$

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

*Default Value:*  $n = 0$

*Accepted values for  $n$ :*

- 0 = Horizontal (all are rotated counterclockwise from horizontal)
- 1 = 90°
- 2 = 180°
- 3 = 270°

## Field Origin, Define

**Purpose** To determine the origin of a field.

**Syntax**  $o_n, m$

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

*Default Value:*

- $n = 0$
- $m = 0$

*Accepted values for  $n$  and  $m$ :*

- $n = 0 - 19999$
- $m = 0 - 19999$

## Font Character Width, Define

**Purpose** To determine the amount of space from the origin of one letter to the origin of the next.

**Syntax**  $z_n$

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** Accepted for bitmap characters only. Intercharacter space command ( $z_n$ ) is ignored by the printer if this command is used.

*Default:* Bitmap width of characters, minus font character offset ( $X_n$ ) plus intercharacter space ( $z_n$ )

*Accepted values for  $n$ :*  $n = 1 - 799$

## Font Type, Select

**Purpose** To choose a font type for human-readable fields.

**Syntax** `cn, m`

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** Depending on what human-readable fonts your printer supports, you can set *n* from 0 to 56.

## Format, Create or Edit

**Purpose** To create or edit a format.

**Syntax** `A or F`

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** If the format number is out of range, an error code 36 is generated.

## Format Direction in a Page, Define

**Purpose** To determine the direction of a format on a page.

**Syntax** `qn`

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

*Default Value:* `n = 0`

*Accepted values for n:*

- `0` = Horizontal (all are rotated counterclockwise from horizontal)
- `1` = 90°
- `2` = 180°
- `3` = 270°

## Format, Erase

**Purpose** To erase a format.

**Syntax** En

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

*Default Value:* NONE

*Accepted values for n:* 1 – 19

**Important** Cannot erase format 0.

## Format Offset Within a Page, Define

**Purpose** To determine the format offset within a page.

**Syntax** On, m

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

*Default Value:*

n = 0

m = 0

*Accepted values for n and m:*

n = 0 - 19999

m = 0 - 19999

## Format Position From Page, Delete

**Purpose** To delete a format from within a page.

**Syntax** mp

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

*Default Value:* p = a

*Accepted values for p:* a – z



## Format Position in a Page, Assign

**Purpose** To assign a format to a page position.

**Syntax** Mp, n

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Important** If the format ID is out of range, an error code of 36 is generated. A format can be in several locations within a page.

**Notes** *n* is the numeric format ID, and *p* is the page position.

## Graphic, Select

**Purpose** To choose a graphic for graphic fields.

**Syntax** cn

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

*Default Value:* n

*Accepted values for n:* 0 – 99

**Important** • Valid for graphic fields only.

## Graphic or UDC, Define

**Purpose** To map a column of bitmap for a graphic or a font character.

**Syntax** u

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

## Height Magnification of Bar, Box, or UDC, Define

**Purpose** To determine box, bar code, or UDC height magnification.

**Syntax** hn

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** *n* corresponds to the vertical magnification of the character bitmap for human-readable fields, POSTNET symbology, and graphics. The printer uses the highest value possible when *n* is set too large. For a 200 dpi printer in Advanced mode, a dot is 5 mil; for a 400 dpi printer a dot is 2.5 mil.

## Human-Readable Field, Create or Edit

**Purpose** To edit or create a human-readable field.

**Syntax** Hn

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

*Default Value:* n

*Values for n:* 0 – 199

**Notes** n corresponds to the vertical magnification of the character bitmap for human-readable fields, POSTNET symbology, and graphics. The printer will use the highest value possible when n is set too large. For a 200 dpi printer in Advanced mode, a dot is 5 mil; for a 400 dpi printer a dot is 2.5 mil.

## Intercharacter Space for UDF, Define

**Purpose** To determine spacing that is added to the default intercharacter gap length for a bitmap font.

**Syntax** zn

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

*Default Value:* n = 2

*Accepted values for n:* 0 – 199

**Notes** n represents the number of dots per pixels. For a 200 dpi printer in Advanced mode, a dot is 5 mil; for a 400 dpi printer a dot is 2.5 mil.

**Important** • If an invalid lengths occurs, an error code 52 is generated.

## Interpretive Field, Edit

**Purpose** To edit an interpretive field.

**Syntax** In

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

*Default Value:* n = 0

*Accepted values for n:* 1 – 199

**Notes** You cannot create interpretive fields when using this command. You can only create or delete them when you enable the interpretive of the bar code field. Every interpretive field is counted as a separate field in the maximum number of 200 fields.

## Interpretive Field, Enable or Disable

**Purpose** To determine if the interpretive field of the current bar code field prints.

**Syntax** `in`

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** Use the `I` command when you want to edit an interpretive field. In the interpretive field, the human-readable font prints 2 dots left aligned under the bar code.

*Default:* `n = 0`

*Accepted values for n:*

- `0` = disabled
- `1` = enable with start and stop characters
- `2` = enable without start and stop characters

## Length of Line or Box Field, Define

**Purpose** To determine the length of a line or box.

**Syntax** `ln`

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** When in Advanced mode, a dot for a 200 dpi printer is 5 mil, and a dot for a 400 dpi printer is 3.3 mil.

*Default Value:* `n = 100`

*Accepted values for n:* 1 – 9999

## Line Field, Create or Edit

**Purpose** To edit or create a line field.

**Syntax** `Ln`

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** The name parameter is optional and can consist of 8 ASCII characters

*Default Value:* `n = 0`

*Accepted values for n:* 0 – 199

## Outline Font, Clear or Create

**Purpose** To clear or create an outline font or graphic.

**Syntax** J

**Not Supported** This command does not work on the Zebra printer with APL-I, or it has significant deviations from the 3400D printer.

## Outline Font, Download

**Purpose** To download outline font descriptions.

**Syntax** j

**Not Supported** This command does not work on the Zebra printer with APL-I, or it has significant deviations from the 3400D printer.

## Page, Create or Edit

**Purpose** To edit or create a page.

**Syntax** Sn

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** Default page (page 0) cannot be altered.

*Default Value:* NONE

*Accepted values for n:* 1 – 9

## Page, Delete

**Purpose** To delete a page.

**Syntax** sn

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** Default page (page 0) cannot be altered.

*Default Value:* NONE

*Accepted values for n:* 1 – 9

## Pitch Size, Set

**Purpose** To set the pitch size for a human-readable field.

**Syntax** gn

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** To scale outline fonts smoothly, use the pitch size command.

*Default Value:* n = 12

*Accepted values for n:* 1 - 50

## Point Size, Set

**Purpose** To set the point size for a human-readable field.

**Syntax** kn

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** One point size is equivalent to 1/72 inch. The higher the point size, the larger the characters.

*Default Value:* n = 12

*Accepted values for n:* 4 - 288

## Print Line Dot Count Limit, Set

**Purpose** To limit the print line dot count limit.

**Syntax** v

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** The printer ignores this because it is a null command.

## Program Mode, Exit

**Purpose** To switch from program mode to print mode and save the format or page currently being edited.

**Syntax** R

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

## User-Defined Character, Clear or Create

**Purpose** To clear or create graphic bitmaps.

**Syntax** Gn

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** The printer erases and redefines a graphic after you define it.

*Default Value:* NONE

*Accepted values for n:* 0 – 99

## User-Defined Character Field, Create or Edit

**Purpose** To create or edit a graphical field.

**Syntax** Un

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** The name parameter is optional and can consist of 8 ASCII characters (excluding the semicolon) and cannot start with a number.

*Default Value:* n = 0

*Accepted values for n:* 0 – 199

## User-Defined Font Character, Create

**Purpose** To identify the next font to be defined.

**Syntax** tn

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

**Notes** n is a decimal representation of an ASCII character. Existing characters are erased by the printer.

*Default Value:* NONE

*Accepted values for n:* 0 – 255

## Width of Line, Box, Bar, or Character, Define

**Purpose** To determine the width magnification of a line, box, bar code, or character.

**Syntax** `wn`

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

*Default value for line, box, bar code fields, and graphics:* `n = 1`

*Accepted values for n:*

Line and box fields: 1 - 9999

Bar code fields: 1 - 99

Graphics: 1 - 999

*Default value for human-readable fields and POSTNET:* `n = 2`

*Accepted values for human-readable fields and POSTNET:* 1 - 250

## Test and Service Commands

### Ambient Temperature, Transmit

**Purpose** Transmits the ambient temperature sensor output back to the host.

**Syntax** A

**Partially Supported** Based on testing, this command is partially supported on the Zebra printer with APL-I firmware with the following difference and output:

The Zebra printer transmits the Fahrenheit temperature back to the host.

The 3400D printer transmits the A/D sensor output back to the host.

### Command Terminator

**Purpose** To end all commands in Test and Service mode.

**Syntax** ;

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

### Dark Adjust

**Purpose** To change the darkness of the print on labels.

**Syntax** K

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

### Factory Defaults, Reset

**Purpose** To set the printer configuration to the factory defaults.

**Syntax** D

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.



## Formats, Print

**Purpose** To print all stored formats.

**Syntax** f

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

## Hardware Configuration Label, Print

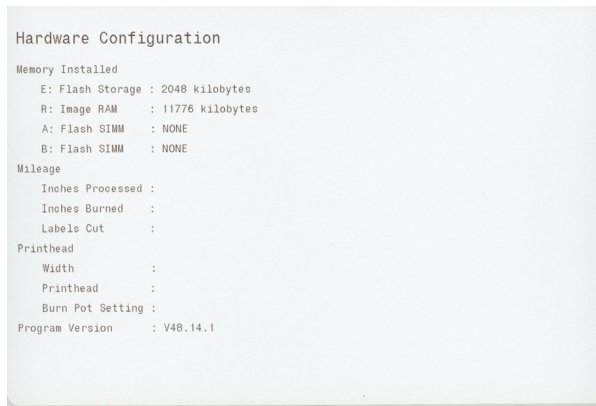
**Purpose** To print a hardware configuration label.

**Syntax** h

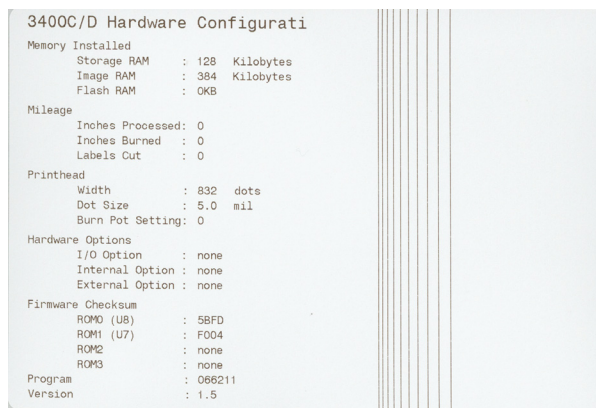
**Partially Supported** Based on testing, this command is partially supported on the Zebra printer with APL-I firmware with the following differences and outputs:

The label examples show how unsupported values on the label could differ, but the overall format is the same:

### APL-I Printer Label



### Intermec 3400D Printer Label



## Label Taken Sensor Value, Transmit

**Purpose** To send the label taken sensor and output back to the host.

**Syntax** T

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

## Pages, Print

**Purpose** To print the pages stored on the printer.

**Syntax** p

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

## Pitch Label, Print

**Purpose** To print the pitch label.

**Syntax** C

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

## Print Quality Label, Print

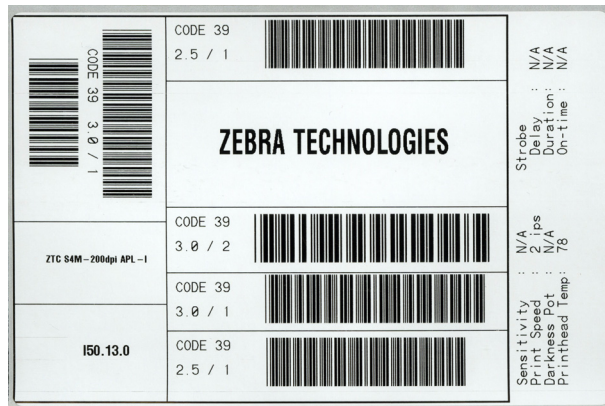
**Purpose** To print the print quality program and model number label.

**Syntax** Q

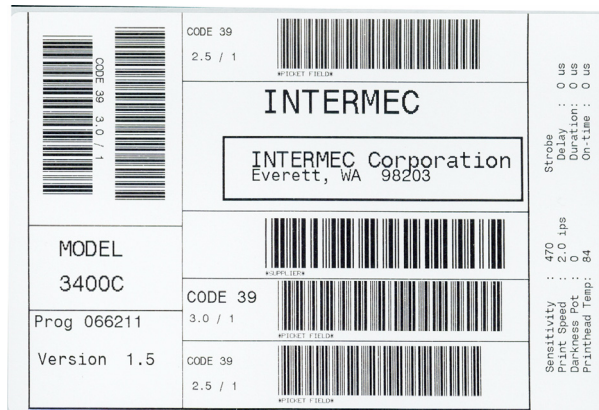
**Partially Supported** Based on testing, this command is partially supported on the Zebra printer with APL-I firmware with the following differences and outputs:

The label examples show that the data on the format differs slightly:

### APL-I Printer Label



### Intermec 3400D



## Printhead Temperature Sensor Value, Transmit

**Purpose** To send the printhead thermistor A/D output back to the host.

**Syntax** p

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

## Reflective Sensor Value, Transmit

**Purpose** To send the label mark reflective sensor A/D output back to the host.

**Syntax** M

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

## Software Configuration Label, Print

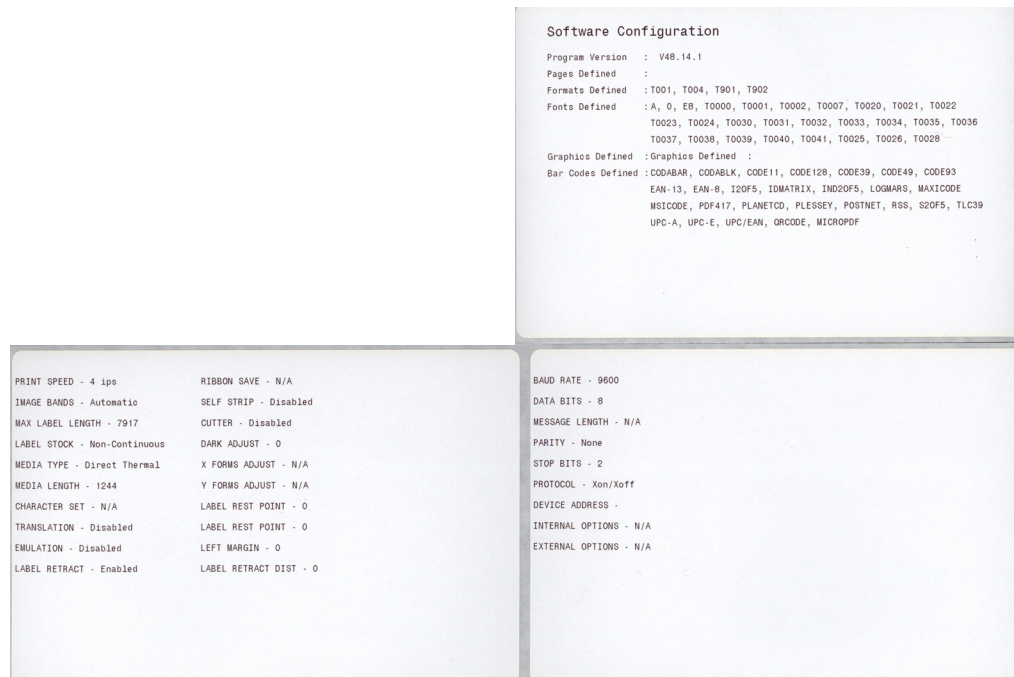
**Purpose** To print a software configuration label.

**Syntax** `s`

**Partially Supported** Based on testing, this command is partially supported on the Zebra printer with APL-I firmware with the following differences and outputs:

The label examples show how the unsupported values on the label could differ, but overall the format is the same.

### APL-I Printer Label



## Intermec 3400D Printer Label



### Test and Service Mode, Exit

**Purpose** To make the printer exit Test and Service mode.

**Syntax** R

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

### Transmissive Sensor Value, Transmit

**Purpose** To send the label gap transmissive sensor and output back to the host.

**Syntax** G

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

## User-Defined Characters (UDC) and Graphics, Print

**Purpose** To print the user-defined characters and graphics stored on the printer.

**Syntax**  $g$

**Supported** Based on testing, this command works the same on the Zebra printer with APL-I firmware as on the 3400D printer.

## User-Defined Fonts, Print

**Purpose** To print the user-defined fonts stored on the printer.

**Syntax**  $t$

**Partially Supported** Based on testing, this command is partially supported on the Zebra printer with APL-I firmware with the following differences and outputs:

**Notes** There are slight differences in spacing, and it is optimized for 4 in. x 6 in. label.

## Set-Get-Do (SGD) Commands

Print server configurations are achieved using standard Set-Get-Do commands.

For more detailed information on Set-Get-Do commands, see the Programming Guide for ZPL II<sup>®</sup>, ZBI 2, Set-Get-Do, Mirror and WML (formerly the ZPL II Programming Guide), Internal Wired and Wireless SGD sections.






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# Network Configuration

This section describes the features and functionality of the ZebraNet Print Servers with printers using APL-I firmware.

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## Overview

The Zebra printer with APL-I firmware with a Zebra print server option allows network connectivity for printer communication.

## Supported Print Servers

Table 2 shows the version of APL-I firmware required to support each of the ZebraNet Print Servers.

**Table 2 • Supported Print Servers and Firmware**

Print Server	Printer	Firmware
10/100 PS External Print Server (Internal or External)	<i>XiIIIPlus</i> , 105 <i>SL</i> , Z4Mplus/Z6Mplus, or <i>PAX4</i>	I60.13.0.0 or later
	S4M	I50.13.3 or later I53.15.0 or later
	ZM400/ZM600	I53.15.0 or later
	Xi4	I53.17.1 or later
Wireless Print Server	<i>XiIIIPlus</i> , 105 <i>SL</i> , Z4Mplus/Z6Mplus or <i>PAX4</i>	I60.15.0 or later
Wireless Plus Print Server	<i>XiIIIPlus</i> , 105 <i>SL</i> , or <i>PAX4</i>	I60.15.0 or later
	ZM400/ZM600, or S4M	I53.15.0 or later
	Xi4	I53.17.1 or later
Internal Wireless Plus Print Server	<i>XiIIIPlus</i> , 105 <i>SL</i> , or <i>PAX4</i>	I60.17.1 or later
	ZM400/ZM600, S4M, or Xi4	I53.17.1 or later

## 10/100 Internal/External Wired Print Server

### Configuration

You can configure the 10/100 Print Server for use with your printer running APL-I firmware using WebView, ZebraNet View, DHCP, or Telnet.



**Important** • For more detailed information on 10/100 print servers, see the ZebraNet® 10/100 Print Server User Guide.

### Supported Protocols

All network features described in the 10/100 Print Server User Guide are supported with APL-I firmware except:

- APL-I is not a ZebraLink enabled firmware.
- You are not able to print a network configuration label using the button on the print server. But, you can still default the print server using this button.
- The 10/100 Print Server alerts can be configured using ZebraNet View, but not ZebraLink Alerts.
- When viewing the web page, you will only see the print server web pages, not the printer web pages.

### Defaulting the 10/100 PS

You can default the 10/100 PS to factory settings using WebView, ZebraNet View, and the Test button.



**Important** • For more detailed information on 10/100 Internal/External Wired print servers, see the ZebraNet® 10/100 Print Server User Guide.

## Internal 10/100 Print Server for Xi4 and ZM400/ZM600

### Configuration

You can configure the 10/100 Internal Print Server for use with your printer running APL-I firmware using DHCP, SGD, or Telnet.



**Important** • For more detailed information on internal 10/100 print servers, see the ZebraNet® 10/100 Internal Print Server User Guide.

### Supported Protocols

All network features described in the 10/100 Internal Print Server User Guide are supported with APL-I firmware except:

- APL-I is not a ZebraLink enabled firmware.
- The ZebraLink Alerts are not supported.
- FTP, POP3, SMTP, and SNMP are not supported.
- Mirroring is not supported.
- No web pages are supported.

### Defaulting the 10/100 Print Server PS

You can default the 10/100 Internal Print Server User Guide to factory settings using the default network menu on the printer's control panel. For more information, see the 10/100 Internal Print Server User Guide.

# Wireless, Wireless Plus, and Internal Wireless Plus Print Servers

This section provides details on working with a wireless print server.

## Configuration

You can configure the Wireless Print Server for use with your printer running APL-I firmware using DHCP, SGD, or Telnet.



**Important** • For more detailed information on wireless print servers, see the ZebraNet<sup>®</sup> Wireless User Guide.

## Supported Protocols

All network features described in the Wireless User Guide are supported with APL-I firmware except:

- APL-I is not a ZebraLink enabled firmware.
- The ZebraLink Alerts are not supported.
- FTP, POP3, SMTP, and SNMP are not supported.
- Mirroring is not supported.
- No web pages are supported.

## Defaulting the Wireless PS

You can default the Wireless Print Server to factory settings using the default network menu on the printer's control panel. For more information, see the specific wireless user guide.



**Notes •**

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## Control Panel Options

This appendix provides you with control panel menu options on the Zebra printers with APL-I firmware.

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## Control Panel Options

Some of the control panel options are password protected. This section tells you how to work through password protected menu options and provides a table of all the control panel options for the supported APL-I printers.



**Note** • For S4M control panel menu options, see [S4M LCD Options on page 106](#).

### Protected Menus

This section tells you how to access these protected parameters.

#### To access the password protected menu options, complete these steps:

The password is: **1234**.

1. If the control panel reads **ENTER PASSWORD**, you need to enter a password to access given control panel menu options.
2. To increase the value, from the front panel:
  - on a *XiIIIPlus* or *105SL* printer, press the right arrow.
  - on a *PAX4*, press the up arrow.
  - on the *Z4Mplus/Z6Mplus*, *ZM400/ZM600*, or *Xi4* printers, press plus (+).
3. To move to the next digit, from the front panel:
  - on a *XiIIIPlus* or *105SL* printer, press the left arrow.
  - on a *PAX4*, press the down arrow.
  - on the *Z4Mplus/Z6Mplus*, *ZM400/ZM600*, or *Xi4* printers, press minus (-).
4. When the password is entered.
  - on a *XiIIIPlus*, *105SL*, or *Xi4* printer, press **NEXT/SAVE**.
  - on a *PAX4*, press **NEXT**.
  - on the *Z4Mplus/Z6Mplus* or *ZM400/ZM600* printers, press **SELECT**.



## Supported Menu

Table 3 identifies the control panel menu options available on your Zebra *XiIIIPlus*, Z4Mplus/Z6Mplus, 105SL, ZM400/ZM600, PAX4, and Xi4 printer with APL-I firmware.

**Table 3 • Control Panel Differences on Supported Printers**

XiIIIPlus	Z4Mplus/Z6Mplus	105SL	ZM400/ZM600	PAX4	Xi4	Control Panel Option	Details and Menu Choices
✓	✓	✓	✓	✓	✓	<b>DARKNESS</b>	This allows you to adjust the darkness of your output.
✓	✓		✓	✓	✓	<b>PRINT SPEED</b>	This allows you to change the print speed inches per second (ips). Typically, the slower the print speed, the better the print quality.
				✓		<b>SLEW SPEED</b>	This allows you to adjust the speed for feeding a blank label (given in inches per second).
				✓		<b>BACKFEED SPEED</b>	If backfeed is on, this allows you to adjust the speed at which the label backs up before printing (given in inches per second).
✓	✓	✓	✓	✓	✓	<b>TEAR OFF</b>	This allows you to set the position of the labels over the tear-off/peel-off bar.
				✓		<b>APPLICATOR PORT</b>	This allows you to determine the action of the verifier port. <b>Password protected.</b>
				✓		<b>START PRINT SIG</b>	This allows you to determine how the printer reacts to the Start Print Signal input on pin 3 of the applicator interface.
✓	✓	✓	✓	✓	✓	<b>PRINT MODE</b>	This allows you to set the type of label delivery.
✓	✓	✓	✓	✓	✓	<b>RESOLUTION</b>	This allows you to set the dot size.
✓	✓	✓	✓	✓	✓	<b>MEDIA TYPE</b>	This allows you to set the type of media you are using.
✓	✓	✓		✓	✓	<b>SENSOR TYPE</b>	This allows you to set the type of media you are using with a web. This indicates the spacing between labels, or if you are using media with black mark print on the back.
	✓					<b>SENSOR SELECT</b>	This allows you to choose the sensor that you want to use.
✓	✓	✓	✓	✓	✓	<b>PRINT METHOD</b>	This allows you to set the method of printing.

Table 3 • Control Panel Differences on Supported Printers (Continued)

XIIIPlus	Z4Mplus/Z6Mplus	105SL	ZM400/ZM600	PAX4	Xi4	Control Panel Option	Details and Menu Choices
✓	✓	✓	✓	✓	✓	PRINT WIDTH	This allows you to set the printable area across the label width.
✓	✓	✓	✓	✓	✓	MAXIMUM LENGTH	This allows you to set the maximum length of the label.
✓				✓	✓	EARLY WARNING MEDIA/SUPPLIES WARNING	This allows you to enable or disable warnings to appear if label or ribbons are low. <b>Password protected.</b>
✓				✓	✓	LABELS PER ROLL	This parameter appears only when Early Warning for Media is enabled. This value should correspond to the number of labels per roll of the media that you are using.
✓				✓	✓	MEDIA REPLACED?	This parameter appears only when Early Warning for Media is enabled.
✓				✓	✓	RIBBON LENGTH	This parameter appears only when Early Warning for Media is enabled and the printer is set for Thermal Transfer operation.
✓				✓	✓	RIBBON REPLACED?	This parameter appears only when Early Warning for Media is enabled and the printer is set for Thermal Transfer operation.
✓			✓	✓	✓	EARLY WARNING MAINT.	This allows you to enable or disable warnings to appear if the printhead needs to be cleaned. <b>Password protected.</b>
✓			✓	✓	✓	HEAD CLEANING	This allows you to enable or disable a warning to appear when the printhead needs to be cleaned. This value is set to correspond to the length of the media or ribbon roll that you are using.
✓			✓	✓	✓	HEAD CLEANED?	This allows you to reset the printhead cleaning counter.
✓			✓	✓	✓	HEAD LIFE	This allows you to set the number of inches of media that the printhead is expected to print.
✓			✓	✓	✓	NEW PRINTHEAD	This allows you to reset the printhead life counter.
✓			✓	✓	✓	NONRESET CNTR	This allows you to reset the advanced counter used by the printer to monitor the label generation in inches, centimeters, and number of labels.

Table 3 • Control Panel Differences on Supported Printers (Continued)

XIIIPlus	Z4Mplus/Z6Mplus	105SL	ZM400/ZM600	PAX4	Xi4	Control Panel Option	Details and Menu Choices
✓			✓	✓	✓	RESET CNTR1	This allows you to reset the advanced counter used by the printer to monitor the label generation in inches, centimeters, and number of labels.
✓			✓	✓	✓	RESET CNTR2	This allows you to reset the advanced counter used by the printer to monitor the label generation in inches, centimeters, and number of labels.
✓			✓	✓	✓	PRINT METERS	This allows you to view the current date and change the date. <b>Password Protected.</b>
✓			✓	✓	✓	LIST ZPL SETUP	This prints a configuration label.
✓	✓	✓	✓	✓	✓	APL-I SW SETUP	This allows you to print out the software configuration label.
✓	✓	✓	✓	✓	✓	APL-I HW SETUP	This allows you to print out the hardware configuration label.
✓	✓	✓	✓	✓	✓	APL-I PRNT QUAL.	This allows you to print out the print quality test label.
✓	✓	✓	✓	✓	✓	APL-I PITCH PRINT	This allows you to print the pitch test label.
✓	✓	✓	✓	✓	✓	LIST NETWORK	This allows you to print a network configuration label, which lists the settings for the various Zebra print servers.
✓	✓	✓	✓	✓	✓	PRINT PAGE	This allows you to print out a page format that was previously sent to the printer by pushing a single button. The number in the lower hand corner of the control panel corresponds to the page number that is printed.
✓	✓	✓	✓	✓	✓	PRINT FORMAT	This allows you to print out a single format that was previously sent to the printer by pushing a single button. The number in the lower left hand corner of the control panel corresponds to the format number that is printed.
✓	✓	✓		✓		FORMAT CARD	This allows you to erase all information from the memory card. <b>Password protected.</b>

Table 3 • Control Panel Differences on Supported Printers (Continued)

XIIIPlus	Z4Mplus/Z6Mplus	105SL	ZM400/ZM600	PAX4	Xi4	Control Panel Option	Details and Menu Choices
✓	✓	✓	✓	✓	✓	INIT FLASH MEM	This allows you to reformat your Flash memory. <b>Password protected.</b>
✓	✓	✓	✓	✓	✓	SENSOR PROFILE	This prints out a sensor profile label.
✓	✓	✓	✓	✓	✓	MEDIA AND RIB.	This allows you to adjust the sensitivity of the media and ribbon sensors.
✓	✓	✓	✓	✓	✓	PARALLEL COMM.	This allows you to control whether or not data is returned via the printer's parallel port for selected commands. <b>Password protected.</b>
✓	✓	✓	✓	✓	✓	BAUD	This allows you to select a baud rate. It must match the rate being used by the host. <b>Password protected.</b>
✓	✓	✓	✓	✓	✓	DATA BITS	This allows you to select the data bits. It must match the data bits being used by the host. <b>Password protected.</b>
✓	✓	✓	✓	✓	✓	PARITY	This allows you to select the parity. It must match the parity on the host. <b>Password protected.</b>
✓	✓	✓	✓	✓	✓	HOST HANDSHAKE	This allows you to select the handshake protocol. It must match the protocol on the host. <b>Password protected.</b>
✓	✓	✓	✓	✓	✓	STATUS RESP.	<b>Important</b> • This allows you to enable or disable the printer from sending a status character after every <ETX> that is received in the data.
✓	✓	✓	✓	✓	✓	COMMUNICATIONS	This allows you to troubleshoot and check the interconnection between the printer and the host computer. <b>Password protected.</b>
				✓		RIBBON TENSION	This sets the tension applied to the ribbon supply spindle (170PAX4 only).
✓	✓	✓	✓	✓	✓	MEDIA POWER UP	This allows you to set the action of the labels when the printer is turned on. <b>Password protected.</b>

Table 3 • Control Panel Differences on Supported Printers (Continued)

XIIIPlus	Z4Mplus/Z6Mplus	105SL	ZM400/ZM600	PAX4	Xi4	Control Panel Option	Details and Menu Choices
✓	✓	✓	✓	✓	✓	HEAD CLOSE	This allows you to set the action of the labels when the printhead is closed. <b>Password protected.</b>
✓	✓	✓	✓	✓	✓	BACKFEED	This allows you to determine when and how much label feedback occurs after a label is removed. <b>Password protected.</b>
✓	✓	✓	✓	✓	✓	X FORMS ADJ.	This allows you to set how far from the left edge of the label the format begins to print. <b>Important</b> • Positive numbers adjust the label away from the printhead. Negative numbers adjust the labels close to the printhead.
✓	✓	✓	✓	✓	✓	Y FORMS ADJ.	This allows you to adjust the print position vertically on the label. <b>Important</b> • Positive numbers adjust the label away from the printhead. Negative numbers adjust the labels close to the printhead.
✓				✓	✓	HEAD TEST COUNT	The printer periodically performs a test of the printhead functionality. This establishes how many labels are printed between these internal tests.
✓		✓		✓		HEAD RESISTOR	This value is preset at the factory to match the resistance value of the printhead. It does not need to be changed unless the printhead or the main logic board is replaced. <b>Important</b> • If this needs to be changed, the change should be done by a qualified service technician.
✓					✓	VERIFIER PORT	This allows you to determine how the printer reacts to the online verifier. <b>Password protected.</b>
✓					✓	APPLICATOR PORT	This allows you to determine the action of the verifier port. <b>Password protected.</b>

Table 3 • Control Panel Differences on Supported Printers (Continued)

XIIIPlus	Z4Mplus/Z6Mplus	105SL	ZM400/ZM600	PAX4	Xi4	Control Panel Option	Details and Menu Choices
✓				✓	✓	ERROR ON PAUSE	When this option is enabled and the print engine is paused, the print engine sets the applicator error state.
✓					✓	START PRINT SIG	This allows you to determine how the printer reacts to the Start Print Signal input on pin 3 of the applicator interface. <b>Password protected.</b>
✓				✓	✓	RESYNCH MODE	This allows you to determine how the printer reacts if the label synchronization is lost and the label top is not where it should be. <b>Password protected.</b>
				✓		RIBBON LOW MODE	When the amount of ribbon on the supply spindle reaches the specified length, the output signal asserts HIGH to provide a RIBBON LOW warning.
				✓		RIB LOW OUTPUT	This is dependent on the setting of <b>RIBBON LOW MODE</b> . If <b>RIBBON LOW MODE</b> is enabled this is asserted HIGH and the amount of ribbon remaining on the supply spool is below a specific threshold level. If <b>RIBBON LOW MODE</b> is disabled, this output lead is disabled.
✓	✓	✓	✓	✓	✓	WEB S.	This is automatically set during calibration. <b>Password protected.</b> <b>Important</b> • If this needs to be changed, the change should be done by a qualified service technician.
✓	✓	✓	✓	✓	✓	MEDIA S.	This is automatically set during calibration. <b>Password protected.</b> <b>Important</b> • If this needs to be changed, the change should be done by a qualified service technician.
✓	✓	✓	✓	✓	✓	RIBBON S.	This is automatically set during calibration. <b>Password protected.</b> <b>Important</b> • If this needs to be changed, the change should be done by a qualified service technician.

Table 3 • Control Panel Differences on Supported Printers (Continued)

XIIIPlus	Z4Mplus/Z6Mplus	105SL	ZM400/ZM600	PAX4	Xi4	Control Panel Option	Details and Menu Choices
✓	✓	✓	✓		✓	TAKE LABEL	This is automatically set during calibration. <b>Password protected.</b> <b>Important</b> • If this needs to be changed, the change should be done by a qualified service technician.
✓		✓	✓	✓	✓	MARK S.	This is automatically set during calibration. <b>Password protected.</b> <b>Important</b> • If this needs to be changed, the change should be done by a qualified service technician.
			✓		✓	TRANS GAIN	This is automatically set during calibration. <b>Important</b> • If this needs to be changed, the change should be done by a qualified service technician.
			✓		✓	TRANS BASE	This is automatically set during calibration. <b>Important</b> • If this needs to be changed, the change should be done by a qualified service technician.
			✓		✓	TRANS BRIGHT	This is automatically set during calibration. <b>Important</b> • If this needs to be changed, the change should be done by a qualified service technician.
✓		✓		✓	✓	MARK MED S.	This is automatically set during calibration. <b>Password protected.</b> <b>Important</b> • If this needs to be changed, the change should be done by a qualified service technician.
✓	✓	✓		✓		MEDIA LED	This is automatically set during calibration. <b>Password protected.</b> <b>Important</b> • If this needs to be changed, the change should be done by a qualified service technician.

Table 3 • Control Panel Differences on Supported Printers (Continued)

XIIIPlus	Z4Mplus/Z6Mplus	105SL	ZM400/ZM600	PAX4	Xi4	Control Panel Option	Details and Menu Choices
✓	✓	✓	✓	✓	✓	RIBBON GAIN/LED	This is automatically set during calibration. <b>Password protected.</b> <b>Important</b> • If this needs to be changed, the change should be done by a qualified service technician.
			✓			MARK GAIN	This is automatically set during calibration. <b>Important</b> • If this needs to be changed, the change should be done by a qualified service technician.
✓		✓		✓		MARK LED	This is automatically set during calibration. <b>Password protected.</b> <b>Important</b> • If this needs to be changed, the change should be done by a qualified service technician.
✓	✓	✓		✓		LCD ADJUST	This allows you to adjust the contrast of your LCD.
				✓		RTS TAKEUP ARM	This is used as a diagnostic tool to monitor the voltage supplied to the Ribbon Tensioning System Takeup Dancer Arm (110PAX4 only).
				✓		RTS SUPPLY ARM	This is used as a diagnostic to monitor the voltage supplied to the Ribbon Tensioning System Supply Dancer Arm (110PAX4 only).
✓	✓		✓	✓	✓	IDLE DISPLAY	This allows you to select the LCD options for the real-time clock.
✓	✓		✓	✓	✓	RTC DATE	This shows the current date. <b>Password Protected.</b>
✓	✓		✓	✓	✓	RTC TIME	This allows you to set the time following the convention selected in <b>IDLE</b> . <b>Password protected.</b>
✓	✓	✓		✓	✓	WIRED PS CHECK?	This tells if the printer searches for a wired print server at bootup.
			✓		✓	PRIMARY NETWORK	This allows you to see if the printer is using a IP setting from the wireless or a wired print server at bootup.



Table 3 • Control Panel Differences on Supported Printers (Continued)

XIIIPlus	Z4Mplus/Z6Mplus	105SL	ZM400/ZM600	PAX4	Xi4	Control Panel Option	Details and Menu Choices
✓	✓	✓		✓	✓	LOAD LAN FROM?	This determines if the printer uses IP settings from the printer or the print server at bootup.
✓	✓	✓	✓	✓	✓	ACTIVE PRINTSRVR	This allows you to see which print server is being used.
✓	✓	✓	✓	✓	✓	IP PROTOCOL	The allows you to see if the user (permanent) or the server (dynamic) selects the IP address.
✓	✓	✓	✓	✓	✓	IP ADDRESS	This allows you to modify this setting, only when Permanent is select for OBTAIN IP ADDRESS.
✓	✓	✓	✓	✓	✓	SUBNET MASK	This allows you to view the subnet mask.
✓	✓	✓	✓	✓	✓	DEFAULT GATEWAY	This allows you to view the default gateway.
✓	✓	✓	✓	✓	✓	MAC ADDRESS	This allows you to view the MAC address for the current wireless radio card.
✓	✓	✓	✓	✓	✓	ESSID	This allows you to view the ESSID for the current wireless configuration.
✓	✓	✓	✓	✓	✓	WLAN SECURITY	This allows you to view the current security type.
✓	✓	✓	✓	✓	✓	RESET NETWORK	This allows you to reinitialize the wireless radio card and the print server (wired or wireless).
✓	✓	✓	✓	✓	✓	PASSWORD LEVEL	This allows you to select if certain Zebra-selected menu items or all menu items are password protected.
✓	✓	✓	✓	✓	✓	LANGUAGE	This allows you to change the LCD language.
✓	✓	✓		✓		DATA CAPTURE	This allows you to turn this feature <b>ON</b> and <b>OFF</b> . When this feature is <b>ON</b> , all the data is received by the printer is captured to an ATA PCMCIA Flash card.

## S4M LCD Options

### S4M Control Panel Navigation

How you navigate through the S4M menu impacts if you come to the top of a protected menu or the bottom of a protected menu. For an example of how the LCD menu navigation works, see the table that follows:

If you navigate...	Then...
Using the right arrow key	When you come to a protected menu, for example <b>ADVANCED SETUP 3</b> , a password needs to be entered. When you access the protected menu, the menu is listed from the top of the menu to the bottom of the menu. For menu details, see <a href="#">Table 5, S4M Protected Menu on page 109</a> .
Using the left arrow key	When you come to a protected menu, for example <b>ADVANCED SETUP 3</b> , a password needs to be entered. When you access the protected menu, the menu is listed from the bottom of the menu to the top of the menu. For menu details, see <a href="#">Table 5, S4M Protected Menu on page 109</a> .



**Example** • This example provides you with a scenario using the right arrow key and a scenario using the left arrow key and how they differ, as follows:

**Scenario One -Using the right arrow key to navigate**

You use the right arrow key to move through the menu for your S4M printer. You come to **ADVANCED SETUP 3**. You enter the password to access the menu. You come to the *first* menu item in **ADVANCED SETUP 3**, which is **PRINT OUT**.

**Scenario Two -Using the left arrow key to navigate**

You use the left arrow key to move through the menu for your S4M printer. You come to **ADVANCED SETUP 3**. You enter the password to access the menu. You come to the *last* menu item in **ADVANCED SETUP 3**, which is **LANGUAGE**.

### S4M Password Protected Menus

Some of the LCD options are password protected. As you navigate through the printer menu, if you come to an **ADVANCED SETUP** menu option, then you have come to password protected menu. These LCD menu options appear when you are about to enter a protected menu:

- **ADVANCED SETUP 3** — for menu details, see [S4M Protected Menu on page 109](#).
- **ADVANCED SETUP 4** — for menu details, see the Maintenance Manual.

**To access the password protected menu options, complete these steps:**

1. If the LCD reads **ADVANCE SETUP 3**, you need to enter a password to access given LCD menu options.
2. On the control panel, press Enter.  
The LCD displays **PASSWORD 0000**. The default password to access **ADVANCED SETUP 3** is 1234.
3. Use the up and down arrow keys to increase and decrease the numbers. Use the right arrow key to advance to the next field.
4. When the password is entered, press Enter.  
The first menu selection in **ADVANCED SETUP 3** is **PRINT OUT**.

To understand how the display of the protected menus depend on how you navigate through the LCD, be sure to read [S4M Control Panel Navigation on page 106](#).

## Supported Menu

[Table 4](#) identifies the unprotected menu options and [Table 5](#) identifies the protected menu options your Zebra S4M printer with APL-I firmware.

**Table 4 • S4M Unprotected Menus**

LCD Option	Details
<b>DARKNESS</b>	This allows you to adjust the darkness of your output.
<b>TEAR OFF</b>	This allows you to set the position of the labels over the tear-off/peel-off bar.
<b>X FORMS ADJ</b>	The label top position adjusts the print position vertically on the label. Positive numbers adjust the label top position farther down the label (away from the printhead), and negative numbers adjust the position up the label (toward the printhead).
<b>Y FORMS ADJUST</b>	The label left position adjusts the print position horizontally on the label. Positive numbers move the left edge of the image toward the center of the label by the number of dots selected while negative numbers shift the left edge of the image toward the left edge of the label.
<b>MEDIA TYPE</b>	This allows you to set the type of media you are using.
<b>SENSOR SELECT</b>	This allows you to choose the sensor that you want to use.
<b>REMOVAL</b>	This allows you to select the type of label removal method you want to use.
<b>PRINT SPEED</b>	This allows you to change the print speed inches per second (ips).  <b>Important</b> • Typically, the slower the print speed, the better the print quality.

**Table 4 • S4M Unprotected Menus**

<b>LCD Option</b>	<b>Details</b>
<b>PRINT WIDTH</b>	This allows you to set the printable area across the label width.
<b>RESOLUTION</b>	This sets the dot size for backward compatibility with some older APL-I printers.
<b>LENGTH</b>	This allows you to set the maximum length of the label.

Table 5 shows the protected menu for **ADVANCED SETUP 3**. To access this, see *S4M Password Protected Menus* on page 106.

**Table 5 • S4M Protected Menu**

<b>LCD</b>	<b>Details</b>
<b>PRINT OUT</b>	This allows you to print certain types labels with specific printer information.
<b>PRINT PAGE</b>	This allows you to print the stored APL-I page.
<b>PRINT FORMAT</b>	This allows you to store and print up to 100 formats.
<b>PARALLEL COMM.</b>	This allows you to select a communications port. It must match the one being used by the host.
<b>BAUD</b>	This allows you to select a baud rate. It must match the rate being used by the host.
<b>DATA BITS</b>	This allows you to select the data bits. It must match the data bits being used by the host.
<b>STATUS RESP</b>	This determines if a response is sent after inquiry commands.
<b>PARITY</b>	This allows you to select the parity. It must match the parity on the host.
<b>HOST HANDSHAKE</b>	This allows you to select the handshake protocol. It must match the protocol on the host.
<b>ACTIVE PRINTSRVR</b>	This allows you to see which print server is being used.
<b>OBTAIN IP ADDRESS</b>	This allows you to select the method by which an IP address will be assigned to the printer.
<b>IP PROTOCOL</b>	The allows you to see if the user (permanent) or the server (dynamic) selects the IP address.
<b>IP ADDRESS</b>	This allows you to modify this setting, only when Permanent is select for <b>OBTAIN IP ADDRESS</b> .
<b>SUBNET MASK</b>	This allows you to view the subnet mask.
<b>DEFAULT GATEWAY</b>	This allows you to view the default gateway.
<b>HEXDUMP</b>	This allows you to check the connection between the printer and the host computer.
<b>CHANGE RTC DATE</b>	This allows you to view the current date and change the date.
<b>CHANGE RTC TIME</b>	This allows you to view the current time and change the time.
<b>LOAD DEFAULTS</b>	This allows you to reset the parameters back to the factory default settings.
<b>DEFAULT NET</b>	This restores the wired and wireless network settings back to factory defaults.
<b>INIT FLASH MEM</b>	This allows you to reformat your Flash memory.

Table 5 • S4M Protected Menu (Continued)

LCD	Details
RIBBON	This is automatically set during calibration.  <b>Important</b> • If this needs to be changed, the change should be done by a qualified service technician.
SENSOR PROFILE	This prints out a sensor profile label.
MEDIA / RIBBON	This allows you to adjust the sensitivity of the media and ribbon sensors.
LANGUAGE	This allows you to change the LCD language.
MAC ADDRESS	This allows you to view the MAC address for the current wireless radio card.
ESSID	This allows you to view the ESSID for the current wireless configuration.
WLAN SECURITY	This allows you to view the current security type.
RESET NETWORK	This allows you to reinitialize the wireless radio card and the print server (wired or wireless).

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